



SUNCOAST *August 1999*

SIGNAL

The Florida West Coast
Section of the IEEE
Serving over 2,300 members in
Charlotte, Citrus, DeSoto, Hardee,
Hernando, Hillsborough, Lee, Manatee,
Pasco, Pinellas, Polk, and Sarasota
Counties

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

August PES/IAS Chapter Meeting SPACEPORT - The New Frontier!

DATE/TIME: Monday, August 23, 1999 6:00 PM

LOCATION: TECO Data Center
1898 Nick Nuccio Parkway, Ybor City

SPEAKER: Mr. Richard Ward

COST: \$5.00 per IEEE member, \$10.00 non-member

RESERVATIONS : Contact James Reed at 813-654-8331 or e-mail MICREED@Earthlink.Net
Reservations must be made no later than August 6, 1999.

Have you been wondering what NASA's next outer space mission's will be? What about the X-34 Hyper

Inside this issue of the Suncoast Signal

Chair's Comment From Al Rosenheck - Page 2

Florida Business Roundtable Meeting - Page 2

MTT/AP/ED Meeting "VEDs Blast into the Next Millennium" - Page 3

Professional Activities Committee for Engineers (PACE) Report - Page 4

Butch Shadwell's Brain Teaser Challenge - Page 4

The IEEE-USA Job Listing Service - Page 5

Review Seminars for PE Electrical and EIT/FE October Examinations - Page 5

Space Plane? Is it going to be NASA's new mission aircraft? Or will it be a replacement aircraft for airlines that will take passengers into space while taking only 15 minutes to travel from New York to Atlanta? What new technologies are being developed to propel these new generation of space vehicles? These are some of the topics that will be discussed by Mr. Richard Ward. Mr. Ward is a Project Engineer at SPACEPORT, a Florida Government agency reporting directly to the Governor. They are an 18 person office responsible for several of the launch pads and facilities utilized by NASA.

SPACEPORT is a 30 year old organization and will play a key role in future NASA endeavors. There will be 10 animated computer presentation of Lockheed Martin's future space planes demonstrating their capabilities and missions.

This is a once in a lifetime opportunity to get really close to the space program, right in our own back yard. Seating will be limited so reserve early.

Chair's Comment

by Al Rosenheck

In the current issue of "the Institute" on the back page under the headline "IEEE briefs", you may have seen a title "Wanted: Evaluators." On a closer look you will see the IEEE is looking for engineering professionals to serve as program evaluators for accrediting engineering and engineering technology programs at U.S. universities. Participation in the accreditation process is a major IEEE responsibility and depends on the efforts of motivated and qualified program evaluators.

Last year when one of these IEEE briefs caught my eye and I decided investigate further. I quickly found our own John Twitchell, currently FWCS Awards chairman, has been a program evaluator for the past couple of years and has participated in several evaluations. I was therefore able to learn first hand from him what the duties entail. He pointed out conducting an accreditation program evaluation is a difficult and time consuming effort that is very important to the institution. Therefore one may expect considerable pressure. Program evaluators generally conduct only one evaluation per year. John confirmed that serving as a program evaluator has provided him with a unique opportunity to contribute to the achievement of high quality education standards in engineering programs.

I applied to the program and in February of this year, I was notified that I had been selected as a IEEE/TAC Program Evaluator and would be expected to attend a training session workshop in Charlotte NC in June. As is usual for IEEE workshops, the day was well thought out and intense in covering the subject.

While I still await my first assignment, I am convinced this is a worthwhile program and would like to encourage our section

1999 IEEE EXECUTIVE COMMITTEE FLORIDA WEST COAST

SECTIONCHAIRMAN: Albert D. Rosenheck
Consultant (941) 395-2117

VICE CHAIRMAN: Quang Tang
Seminole Electric Cooperative (813) 963-0994

SECRETARY: Jules Joslow
ElectroMark, Inc. (800) 274-2383

TREASURER: Betty Fritz
Tampa Electric Co. (813) 228-4662

SIGNAL EDITOR: Quang Tang
Seminole Electric Cooperative (813) 963-0994

AWARDS: John Twitchell, PE
Seminole Electric Cooperative (813) 963-0994

BYLAWS: Richard Beatie, PE
Consultant (813) 289-0252

EDUCATION: Dr. Rudolf E. Henning, PE
University of South Florida (813) 974-4782

PACE: Mark D. McKeage, PE
Florida Power Corp. (727) 826-4393

MEMBERSHIP: John Conrad
Windsor Engineering, Inc. (813)926-4004

STUDENT BRANCH CO-ADVISORS:
Dr. Paris Wiley, USF (813) 974-4743
Dr. Worth Henley, USF (813) 974-2689

STUDENT BRANCH MENTOR: Jim Howard
Tampa Electric Co. (813) 630-6233

STUDENT BRANCH CHAPTER:
John Tatum
University of South Florida (813) 974-4776

PES/IAS CHAPTER: Mary Ellen Thacker
Tampa Electric Co. (813) 228-4647

MTT/AP/ED CHAPTER: Greg M. Bonaguide
Raytheon Systems Co. (727) 302-3367

COMP/AESS CHAPTER: Richard Beatie, PE
Consultant (813) 289-0252

SIGNAL PROC. CHAPTER: Joe K. Winner
Raytheon Systems Co. (727)302-3162

Web Page <<http://ewh.ieee.org/r3/floridawc>
WEB MASTER: Joey Duvall

THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues.

The opinions expressed, as well as the technical accuracy of authors, advertisers or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied.

All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month. Address all correspondence to: **Quang Tang**
Seminole Electric Cooperative, Inc.
P.O. Box 272000
Tampa, Florida 33688-2000
Voice: (813) 963-0994 Fax: (813) 264-7906
E-MAIL: q.tang@ieee.org

members to strongly consider making application to participate in the program. Information packages are available on the web or e-mail via accreditations@ieee.org. Contact John Twitchell or me for more details.

Florida Business Roundtable Meeting

September 16 & 17 - Radison Twin Towers, Orlando, Florida

Topics include:

- ☐ Management techniques
- ☐ Health and safety
- ☐ Workforce development and retention
- ☐ Regulatory / environmental issues
- ☐ Business opportunities in Florida
- < Professional development

For more information on the upcoming meeting, call Gene Zakis at Sargent & Lundy (727)578-2500 or Mike Rivers at Tampa Electric (813)641-5106.

August MTT/AP/ED Meeting

"VEDs Blast into the Next Millennium"

DATE/TIME: Tuesday, August 31, 1999 6:00 PM

LOCATION: Raytheon Systems Company St. Petersburg, 1501 72nd Street North, St. Petersburg
Please call Greg Bonaguide at (727)302-3367 for directions.

RESERVATIONS: Leave name, number and country of citizenship with Greg Bonaguide
Phone: (727)302-3367; e-mail: gmba@eci.esys.com
Join us for dinner after the meeting. Bring a guest; non-members welcome!

SPEAKER: Richard True, Chief Scientist, Litton Systems, Inc.
Electron Devices Division, San Carlos, CA

ABSTRACT:

Electromagnetic systems are reaping the benefits of a decade of innovations in vacuum electron device (VED) technology. Richard True, the featured speaker for the August 31 meeting of the IEEE Florida West Coast Section of the MTT-S / AP-S / ED-S, will present the basic principles of operation of these devices, and identify some recent exciting achievements.

One key system building block integrates a miniature high efficiency vacuum power booster traveling wave tube (TWT) with a high gain solid state amplifier and electronic power conditioner into a compact, low noise, very high efficiency, microwave or millimeter wave power module (MPM / MPPM). Also discussed is the folded waveguide TWT (FWTWT) which is a compact high power device ideally suited for 35 or 95 GHz radar and communication system applications, and can produce 1000+ watts of average power in Ka-Band.

Devices for high energy physics and other applications focus on klystrons, and the recently invented hobetron, a current-regulating electron beam switch. Over the past few years, a 75 megawatt peak power, 11.4 Ghz, PPM (periodic permanent magnet) focussed klystron was developed at the Stanford Linear Accelerator Center (SLAC) for the Next Linear Collider.

A brand new device developed specifically for UHF HDTV, the constant efficiency amplifier (CEA), will also be included in the presentation. This device effectively doubles the efficiency of present amplifiers, and if used over the lifetime of the patent, it is projected that it will save the broadcast industry over a billion dollars.

Finally, this past year, the state-of-the-art for powerful millimeter wave coherent amplifiers was redefined by a blockbuster device. A team of workers from Litton EDD, Communications and Power Industries (CPI), the Naval Research Lab (NRL), and the University of Maryland, succeeded in producing a four-cavity 94-GHz gyroklystron which pumps out over 100,000 watts of peak power, and a whopping 10,000 watts of average power. This device is slated for use in high-resolution radar systems.

BIOGRAPHY:

Richard True is Chief Scientist at Litton Systems, Inc., Electron Devices Division in San Carlos, CA, where he has worked since 1973. Over the years, he has designed most of the electron beam optical

systems in the TWT's, klystrons, and other devices manufactured by Litton EDD using theories and software that he originated. Dr. True is a Fellow of the IEEE.

PACE Report

by **Mark McKeage**

On July 15, the Section and PACE sponsored a joint meeting at the Electronic Commerce Resource Center (ECRC). Our hosts, Ed Wegman, Trudy Ramsay & Pete Torres introduced their facility to twenty members. The ECRC is operated by Concurrent Technologies Corporation, and is responsible to the U.S. Department of Defense for funding.

The ECRC recently broke ground on a electronics dis-assembly building. This state of the art building will house the tools required to dismantle and salvage electronic components from out of date electronic hardware. We were introduced to a new technology that the ECRC is using to help design their building. The invention is a horizontal projection table which, when the viewer wears special glasses, projects images in three dimensions. Staff intend to use the table to help them with building layout and design.

The ECRC provides education and training to small and medium-sized companies who wish to do electronic business with the U.S. Government. Using the Internet as a communications and marketing medium, businesses can inform Government agencies of their products and services, and bid on Government projects. The ECRC facilitates companies' growth into this type of business. For a list of current training programs, please check out their web page at <http://www.fecrc.ctc.com>.

August Brain Teaser Challenge

by **Butch Shadwell**

Fred Smith was a lonely man. He kept to himself and rarely made conversation with people he met. All of the bagging persons at the local grocery felt snubbed. People would often talk about Fred behind his back, unless he turned around suddenly and they found themselves at his front. They would say unkind things and make unsubstantiated guesses about his state of origin and whether or not his feet were pedicured.

What everyone didn't know was that Fred was indeed from New Jersey and that besides the fact that his toenails grew unchecked, he also spent a great deal of his time working on his mold collection. This interest in fungi prompted a need to manage a moist environment. Fred decided he would turn his other hobby, electronics, to good use and build a moisture detector. Having found a proven schematic in a popular hobbyist magazine, Fred built the device. To test it Fred poured some water (a bottled variety with the label missing) into a clean glass and inserted the moisture probe. To his dismay, it registered no moisture. If we assume the schematic was proven and Fred did his usual punctilious job of reproducing it correctly, what do you think could have caused the unexpected reading?

Reply with the IEEE Florida West Coast Section Suncoast Signal reference to Butch Shadwell by the 20th at (904)223-4465 (voice), 904-223-4510 (fax), b.shadwell@ieee.org, 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.ccse.net/~butchs/>). Only the names of correct respondents are mentioned in the solution column on the next Signal.

July Brain Teaser Challenge Solution

All of the responses I received this month had the right answer. I don't know if my questions are getting easier or if it's due to sun spot activity. As you recall, last month I was recounting discussions I had had with several of the key characters in the latest Star Wars saga. The discussion came down to the byproduct of Boss Nass' submarine's power plant. I had discovered it was an oxygen-hydrogen fuel cell. Regardless of the sort of accent you think Jar-Jar Biggs has, the answer is the same, "pure water".

On another note, if you had a vessel with this type of power source you could save the byproduct for the benefit of the crew, but if you expelled the byproducts of your boats propulsion system you might find

buoyancy.

SARGENT & LUNDY ENGINEERS
LEADERS IN ENGINEERING SINCE 1891

- Power Engineering & Design
- Transmission/Distribution
- Environmental Consulting
- Information Technology Services
- Construction Management

9500 Koger Blvd. Gene Zakis
Suite 200 (813) 578-2500
St. Petersburg, FL 33702

SMR & THREE PHASE INDUSTRIES COMPONENTS



SMR

SMR & THREE PHASE INDUSTRIES COMPONENTS
10000 W. 11th Ave., Suite 100, Fort Lauderdale, FL 33324
Tel: (954) 578-1111 Fax: (954) 578-1112

The IEEE-USA Job Listing Service

How the Information Superhighway Can Become the Road to your Next Engineering Hire

The IEEE-USA Job Listing Service is a searchable database on the Web.

Simply submit a job-listing form by fax, email or a Web submission form. Job listings are updated weekly and remain posted for 30 days unless you specify otherwise.

No other employment service combines so many advantages: low cost, national scope, direct access to U.S. electrical and computer engineers, and ease of use by employers, recruiters and job seekers.

For more information and a job-listing form, contact Bill Anderson at (202)785-0017; fax (202)785-0835, or w.anderson@ieee.org.

For more information or to list jobs: www.ieee.org/jobs.html

1999 Review Seminars For PE Electrical and EIT/FE October Examinations

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:

Tuesday, August 10 for the EIT/FE Exam

Thursday, August 12 for the EE Exam

Seminars are conducted from 7-10 P.M. (Tues or Thurs) for ten weeks. The registration fee is \$200 and includes text. The seminars will be held at the St. Pete Campus of the University of South Florida

To register, contact: Alan M. Keith, P.E., P.O. Box 14042, (EC51), St. Pete, FL 33733

Alan.M.Keith@fpc.com

Phone (727) 384-7937 FAX (727) 384-7994
Pinellas Chapter, Florida Engineering Society

August 1999 Calendar of Events

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|--|-----------|---|--------|----------|
| 1 | 2 | 3 IEEE-FWCS Executive Committee Mtg at TECO Data Ctr 6:00PM | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 EIT/FE Exam Review Seminar at USF St. Pete Campus 7:00 PM | 11 | 12 PE (Elect.) Exam Review Seminar at USF St. Pete Campus 7:00 PM | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |

U.S. POSTAGE PAID
TAMPA, FL. PERMIT
No. 1197

| | | | | | | |
|----|--|---|----|----|----|----|
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 PES/IAS Meeting at TECO Data Center 6:00 PM | 31 MTT/AP/ED Meeting at Raytheon 6:00 PM | | | | |

Institute of Electrical and
Electronics Engineers, Inc.
Florida West Coast Section
3133 W. Paris
Tampa, Florida 33614

DATE SENSITIVE MATERIAL. DO NOT DELAY

MEMBERS: Please post at your workplace!

Send address changes including IEEE member number to: IEEE Member Services
P.O. Box 1331, Piscataway, NJ 08855-1331 or call (800)678-4333

